

AMENDMENT TO THE CLAIMS

1. (Currently Amended) An IR dryer, for use in drying a continuous paper web by means of IR radiation, comprising:

an array of IR emitters, each IR emitter having a length, a first curvature along a radial axis thereof, and arranged in spaced relation to the paper web;

5 a lamp protection plate placed intermediate the IR emitters and the paper web; wherein a paper web is moved in a curved path to dry the paper web and wherein each of the IR emitters is curved has a second curvature along its length and extends substantially parallel to of the curved path, such that each IR emitter can radiate normal to the paper web.

2. (Original) An IR dryer as claimed in claim 1 wherein each of said IR emitters is a lamp comprising a heating element located within a curved quartz tube.

3. (Original) An IR dryer as claimed in claim 1 wherein each of said IR emitters is gas-powered.

4. (Previously Presented) An IR dryer as claimed in claim 1 wherein said lamp protection plate comprises an array of curved quartz tubes.

5. (Previously Presented) An IR dryer as claimed in claim 4 wherein said lamp protection plate is cooled, in use, by the passage of gas through said curved quartz tubes.

6. (Previously Presented) An IR dryer as claimed in claim 1 further comprising a curved reflector plate.

7. (Currently Amended) An IR dryer, for use in drying a continuous paper web by means of IR radiation, comprising:

an array of IR emitters arranged, in use, in spaced relation to the paper web, said array of IR emitters comprising a plurality of first quartz tubes ~~and each tube having an IR heating~~
5 ~~element therein, said IR emitters having a first curvature along a radial axis thereof, and a second curvature along its length;~~

a lamp protection plate intermediate the IR emitters and the paper web;
said lamp protection plate comprising a second plurality of quartz tubes arranged in an array.

8. (Previously Presented) An IR dryer as claimed in claim 7 wherein the lamp protection plate is cooled in use, by the passage of gas through said second plurality of quartz tubes.

9. Cancelled.

10. (Previously Presented) An IR dryer as claimed in claim 7 wherein at least one of said first and second quartz tubes are curved.

11. (Previously Presented) A method of bending an elongate quartz tube comprising the steps of:

supporting the tube in a substantially vertical orientation;

gripping the tube near its uppermost end;

5 heating the tube at region intermediate its lowermost end and the uppermost end;

providing a pivot arm to grip the tube at the uppermost end; and

moving the gripped uppermost end of the tube by rotating the pivot arm thereby pulling said uppermost end so that the tube, softened in a vicinity of the heating region, is bent.

12. (Original) A method as claimed in claim 11 wherein the gripped uppermost end of the tube is moved in an arc.

13. (Previously Presented) A method as claimed in claim 11 wherein the tube is counterbalanced.

14. (Previously Presented) A method as claimed in claim 11 wherein the lowermost end of the tube is constrained to move in a substantially vertical path.

15. (Previously Presented) Apparatus for bending and elongate quartz tube comprising;
support means for supporting the tube in a substantially vertical orientation said support means including a follower attached to a lowermost end of said tube;
5 gripping means for gripping the tube near its uppermost end;
heating means situated at a region intermediate the lowermost end and the uppermost end of the tube; and
rotating means for rotating and moving the gripped uppermost end of the tube, in use, so that the tube, softened in the vicinity of the heating means, is bent as the rotating means pulls the
10 tubes.

16. (Original) Apparatus as claimed in claim 15 wherein the heating means substantially surround the tube, in use.

17. (Previously Presented) Apparatus as claimed in claim 15 wherein the heating means comprises a plurality of gas burners.

18. (Previously Presented) Apparatus as claimed in claim 17 wherein the plurality of gas burners comprises a ring of gas burners, in the center of which the tube is situated, in use.

19. (Previously Presented) Apparatus as claimed in claim 15 further comprising barrier means which has cured surface against which the tube may abut, in use, so as to prevent lateral movement of the tube.

20. (Original) Apparatus as claimed in claim 19 wherein the barrier means comprises a wheel.

21. (Previously Presented) Apparatus as claimed in claim 20 wherein the wheel is removable and replaceable with a wheel of different diameter.

22. (Previously Presented) Apparatus as claimed in claim 15 further comprising a counter-balance arrangement by means of which the lowermost end of the tube can be constrained in use, to follow a substantially vertical path.

23. (Previously Presented) Apparatus as claimed in claim 15 wherein said driving means comprises a pivotable arm, at one end of which is situated said gripping means, the arm being pivotable in use, so that the gripping means generally describes an arc.

24. (Previously Presented) Apparatus as claimed in claim 23 wherein a pivot point of said pivotable arm is, in use, substantially horizontally level with a desired region of bending of the tube.

25. (Previously Presented) Apparatus as claimed in claim 23 wherein said pivotable arm is driven by a motor.

26. (Previously Presented) Apparatus as claimed in claim 15 wherein said gripping means is water-cooled.

27-28. Cancelled.

29. (Previously Presented) An IR dryer for drying a continuous web of paper comprising:

a drying cylinder for moving the web of paper;

an array of curved lamps spaced from the cylinder, each of which lamps includes an IR

5 heating element located within a corresponding curved quartz tube, each of the curved lamps having a length extending substantially parallel to and being curved along its length in a direction of a curved path of the paper on the cylinder such that the curved lamps can radiate normal to the cylinder; and

10 a curved lamp protection element comprising a plurality of quartz tubes placed between said web of paper and said array of curved lamps.

30. (Previously Presented) An IR dryer as claimed in claim 29 further including a curved reflector plate.

31. Cancelled.

32. (Previously Presented) An IR dryer as claimed in claim 29, wherein:

said lamp protection element comprises a plurality of additional quartz tubes arranged side by side and adjacent tubes of said plurality of additional quartz tubes being in contact with one another thereby forming a continuous curved lamp protection element.

33. (Previously Presented) An IR dryer, as claimed in claim 32, wherein:

said plurality of additional quartz tubes have a longitudinal axis extending in a same direction as movement of the web of paper.

34. (Previously Presented) An IR dryer as claimed in claim 29, wherein:
said array of curved lamps has a longitudinal axis extending in a same direction as movement of the web paper.